

REMARKS

Claims 1-11, 15-17 remain pending in the instant application. Claims 1-11 presently stand rejected and claims 15-17 presently stand withdrawn from consideration. Claims 1 and 7 are amended herein. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

Provisional Election

Applicants hereby provisionally elect Group I including claims 1-11 with traverse and reserve the right to petition this restriction requirement.

Election/Restrictions

The Examiner has required an election between the claims of Group I (claims 1-11) and Group II (claims 15-17). Applicants traverse this election requirement and the identification of claims 1-11 and claims 15-17 as independent or distinct inventions. The Examiner has characterized independent claims 1 and 15 as a product and process of use.

A product and a process of using the product can be shown to be distinct inventions if either or both of the following can be shown:

(A) the process of using as claimed can be practiced with another materially different product; or

(B) the product as claimed can be used in a materially different process.

The burden is on the examiner to provide an example, but the example need not be documented.

If the applicant either proves or provides a convincing argument that the alternative use suggested by the examiner cannot be accomplished, the burden is on the examiner to support a viable alternative use or withdraw the requirement.

M.P.E.P. § 806.05(h). The Examiner has invoked clause (B) of this section stating, “[i]n the instant case the system of invention of Group I can be operated using a different method as cited in U.S. Patent No. 6,317,538 to Shigehara.

Claim 15 covers propagating an optical signal through a grating structure similar to the grating structure recited in claim 1. Since the product or system claimed in independent claim 1 recites, “an **optical path** formed within the substrate **passing through** the plurality of regions and the intervening areas of the substrate”, the grating recited in claim 1 cannot be used in a materially different process. Simply propagating a

signal along the “optical path” recited in claim 1 executes the method of claim 15. Therefore, any use of the grating structure in claim 1, which includes propagating an optical signal along the recited “optical path” is executing the method of claim 15. The Examiner has not provided any suggested alternative use of the grating structure in claim 1 that does not include propagating an optical signal through the recited “optical path.” Applicants earnestly and respectfully request the instant restriction requirement be withdrawn.

Constructive Election

The Examiner further states, “[s]ince applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 15-17 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.” *Final Office Action* mailed March 24, 2005, page 3.

However, Applicants note that the originally filed application did in deed include method claims (now cancelled claims 12-14) and the Examiner previously issued an Office Action on the merits rejecting claims 12-14 without issuing a Election/Restriction requirement. Applicants further note that the relation between original claim 1 and original claim 12 is not dissimilar to the relation between current claim 1 and claim 15. Yet, the Examiner has only now issues the Election/Restriction requirement. Since method claims were originally presented and method claims have always been pending, the Examiner cannot correctly state that Applicants have “constructively” elected not to pursue a method claim set. Applicants earnestly and respectfully request the instant restriction requirement be withdrawn.

Election/Restriction Improper On Final Rejection

Applicants note that an Election/Restriction requirement “will be made before any action upon the merits; however, it may be made at **any time before final action** in the case at the discretion of the examiner.” M.P.E.P. § 811. The Examiner has previously issued a rejection on the merits without issuing an election/restriction

requirement, but now in violation of MPEP § 811 issues such, not before, but rather concurrent with a final action. Applicants further note that there is “a serious burden on the examiner if restriction is required.” M.P.E.P. § 803. “If the search and examination of an entire application can be made without serious burden, the examiner **must** examine it on the merits, even though it includes claims to independent or distinct inventions.” M.P.E.P. § 803 (emphasis added). **Applicants note that the Examiner was able to issue a previous Office Action without claiming a serious burden or issuing a Election/Restriction requirement**, but is only now claiming such burden concurrent with a final action. Applicants earnestly and respectfully request the instant Election/Restriction requirement be withdrawn.

Claim Rejections – 35 U.S.C. § 103

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Scalora et al. (US 6,343,167 B1) in view of Hane et al. (US 5,801,378).

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03.

Applicants note that the instant application is a divisional of US Application No. 10/188,016 (referred to hereafter as the ‘016 application), in which the Examiner has recently issued a Notice of Allowance. Independent claim 1 of the instant application now recites all the features of the allowed independent claim 1 of the ‘016 application. Accordingly, the Examiner has already deemed the subject matter of amended claim 1 as allowable.

To be sure, amended independent claim 1 now recites, in pertinent part,

the grating having grating periods with substantially constant pitch, wherein each of the grating periods includes one of the plurality of regions and one of the intervening areas of the substrate, **wherein consecutive ones of the plurality of regions have different widths and consecutive ones of the intervening areas have different widths**; and

an optical path formed within the substrate **passing through** the plurality of regions and the intervening areas of the substrate.”

The combination of Scalora and Hane fails to disclose the above highlighted portions of amended claim 1. The Examiner acknowledges that “Scalora does not disclose the integrated circuit including a substrate and a plurality of regions formed in the substrate.” *Final Office Action* mailed March 24, 2005, page 4, section 3. However, the Examiner cites Hane as teaching this missing element.

Referring to FIG. 3 of Hane, a diffraction grating 32 is illustrated having transparent portions 36 and non-transparent portions 38. Hane discloses that diffraction grating 32 is an alternative embodiment to replace diffraction grating 22 in FIG. 1 (see *Hane*, col. 8, lines 4-8). The system illustrated in FIG. 1 is disclosed as operating as follows. Light is emitted from a light source, passes through grating 20, through the slits in grating 22 (i.e., transparent portions 36 of grating 32 in FIG. 3) and is received at light receiving unit 24. *Hane*, col. 5, lines 55-64.

However, at no time does Hane disclose an optical path passing through BOTH transparent portions 36 (cited by Examiner as corresponding to the “plurality of regions”) AND non-transparent portions 38 (cited by the Examiner as corresponding to the “intervening areas of the substrate”). In fact, Hane cannot possibly disclose or teach an optical path passing through both the transparent and non-transparent portions, since by definition a “non-transparent” portion does not pass light and therefore cannot have an optical path passing through it.

Hane discloses a diffraction grating 22 (or 32) that receives light from a backside, diffracts the light with slits (i.e., transparent portions) to generate interference patterns. Hane does not disclose or teach passing light along the length of the diffraction grating 22 (or 32) to form a Bragg grating by forming an optical path through the transparent and non-transparent portions.

Consequently, the combination of Scalora and Hane fails to teach or suggest all elements of claim 1, as required under M.P.E.P. § 2143.03. Accordingly, Applicants request that the instant §103(a) rejections of claims 1 be withdrawn.

Dependent claims 2-11 are nonobvious over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 103 rejections for claims 2-11 be withdrawn.

Patentability of Method Claims 15-17

Independent claim 15 recites, in pertinent parts,

propagating an optical signal through a Xth region of a plurality of regions formed in a substrate, the plurality of regions having refractive indices different from that of the substrate, each of the plurality of regions separated by intervening areas of the substrate to form a grating ...

propagating the optical signal through a Yth intervening area of the intervening areas of the substrate...

Applicants submit that the cited prior art fails to disclose, teach, or suggest the above elements. Independent claim 15 recites “each of the plurality of regions separated by intervening areas of the substrate to form a grating...” Claim 15 further recites that an optical signal propagates through one of the plurality of regions and one of the intervening areas of the substrate.

Referring to FIG. 3 of Hane, a diffraction grating 32 is illustrated having transparent portions 36 and non-transparent portions 38. Hane discloses that diffraction grating 32 is an alternative embodiment to replace diffraction grating 22 in FIG. 1 (see *Hane*, col. 8, lines 4-8). The system illustrated in FIG. 1 is disclosed as operating as follows. Light is emitted from a light source, passes through grating 20, through the slits in grating 22 (i.e., transparent portions 36 of grating 32 in FIG. 3) to form an interference pattern and is received at light receiving unit 24. *Hane*, col. 5, lines 55-64.

However, at no time does Hane disclose propagating an optical signal through BOTH transparent portions 36 (cited by Examiner as corresponding to the “plurality of regions”) AND non-transparent portions 38 (cited by the Examiner as corresponding to the “intervening areas of the substrate”). In fact, Hane cannot possibly disclose or teach propagating an optical signal through both the transparent and non-transparent portions, since by definition a “non-transparent” portion does not propagate light and therefore cannot have an optical signal propagating through it.

Accordingly, Applicants respectfully submit that claims 15-17 are novel and nonobvious over the cited prior art.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative at (206) 292-8600 if the Examiner believes that an interview might be useful for any reason.

CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

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Date: May 19, 2005



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